REMARKS

Claims 28-66 remain in this application. Claim 32 has been amended. The amendment is supported by the specification and no new matter has been added. No claims have been cancelled or added. The Applicants respectfully request reconsideration of this application in view of the above amendments and the following remarks.

Claim Objections

The Examiner has objected to claim 32 because of the following stated informalities: it is not a complete sentence. It is not clear whether the applicant intended to end the sentence "wherein the appearance data comprises color data", or whether more matter is to be added.

Applicants submit that claim 32 has been amended, and respectfully request that the rejection be withdrawn.

Claim Objections §101

The Examiner has rejected claims 28-33 and 64 under 35 U.S.C. §101 because they are directed to non-functional data and therefore unstatutory.

Applicants respectfully submit that datastructures are not non-functional data. As discussed in the MPEP "a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, **and is thus statutory**" (emphasis added; MPEP 2106 IV.B.1(a); 2100-13). The rejection should be withdrawn.

35 U.S.C. §103(a) Rejection – Perry in view of Mallet

The Examiner has rejected claims 28-38, 40-51, 55, 58-61 and 63-66 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,483,518 issued to Perry (hereinafter referred to as "Perry") in view of U.S. Patent No. 6,300,958 issued to Mallet (hereinafter "Mallet"). Without admitting the appropriateness of combining these references, the Applicants respectfully submit that the present claims are allowable over any combination of Perry and Mallet.

Claim 28 recites a data structure comprising, "*appearance data that indicates an appearance for each of a plurality of nodes associated with a portion of a surface of an object; displacement data that indicates a displacement distance for each of the plurality of nodes from a corresponding reference; and local coordinate system data that indicates a local coordinate system for the plurality of nodes*". These limitations are not taught or suggested by any combination of Perry and Mallet.

As previously discussed, Perry does not teach or suggest local coordinate system data that indicates a local coordinate system for the plurality of nodes. As understood by the Applicants, Perry discusses using a single world coordinate system for all cells of a bounding box surrounding an object. As discussed at column 7, line 64, through column 8, line 3: "*FIG. 1 shows a bounding box 100 enclosing a portion of a distance field associated with an object 101. In 2D, the bounding box 100 is located in some world coordinate space defined by an origin 103 and axes 104 and 105. The space enclosed by the bounding box is defined in terms of the coordinates of the world coordinate space. The size and location of the bounding box is specified by its vertices 109*". Also, the bounding box may be hierarchically partitioned into cells (see e.g., column 8, lines 22-29).

Perry discusses that the hierarchical distance fields may be represented by data structures. Figure 4 of Perry shows a hierarchical distance field (HDF) 400 including an HDF header 500 and cell data 600. The HDF header specifies and defines the bounding box presumably in terms of the world coordinates. "*As shown in FIG. 5, the HDF header 500 can include a bounding box specification 510 defining the bounding box 100 of the HDF*" (column 9, lines 50-52). The HDF header includes a pointer 560 to the cell data 600.

Perry does not teach or suggest that the cell data for individual cells of the bounding box may include local coordinate system data that indicates a local coordinate system for the plurality of nodes. FIG. 6 of Perry is a block diagram of the cell data. Applicants have carefully reviewed FIG. 6 and have found absolutely no coordinate system data. As understood by Applicants, Perry discusses using a different approach based on a hierarchical structure to relate the cells to the bounding box. As shown in FIG. 6, the cell data includes pointers to children cells 640 and a pointer to a parent cell 640. The hierarchical structure and the pointers interrelate the cells to one another and to the bounding box.

Applicants submit that such a hierarchical structure may potentially introduce disadvantages, such as complicating parallel processing of the graphical data in different rendering units. As discussed in the patent application, "*According to one embodiment, and in contrast to triangle vertices, a coordinate system may be local to a spatial patch and independent of and unrelated to coordinate systems of other spatial patches. This independence may facilitate parallel processing of the two spatial patches*" (paragraph [0034]). In any event, it is clear that Perry does not teach or suggest the claimed local coordinate system data that indicates a local coordinate system for the plurality of nodes.

In the present Office Action, the Examiner cited Mallet as disclosing a coordinate system local to a plurality of triangles (column 9, lines 49-50). As shown in Figure 4, the local coordinates appear to be for a triangle. As understood by Applicants, the vertices of the triangle do not have a displacement distance from a reference. As clearly recited in claim 28, the local coordinate system data is for the nodes that have the displacement distances. Accordingly, any combination of Perry and Mallet, which does not even seem appropriate, does not teach or suggest a data structure comprising both displacement distances for nodes and local coordinate system data for the nodes having the displacement distances.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest **all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Since any combination of Perry and Mallet does not teach or suggest all limitations, **claim 28** and its dependent claims are believed to be allowable over any combination of Perry and Mallet. **Independent claims 36, 44, 48, 58, and 64** and their dependent claims are believed to be allowable for similar reasons.

35 U.S.C. §103(a) Rejection – Perry in view of Mallet and Cox

The Examiner has rejected claim 39 under 35 U.S.C. §103(a) as being unpatentable over Perry in view of Mallet and U.S. Patent No. 5,751,931 issued to Cox

et al. ("Cox"). Claim 39 depends from claim 36, which is believed to be allowable over Perry and Mallet for reasons similar to those discussed above. The Applicants have briefly reviewed Cox and submit that the missing limitations are also not taught or suggested in Cox. Accordingly, claim 39 is believed to be allowable.

35 U.S.C. §103(a) Rejection – Perry in view of Mallet and Johns

The Examiner has rejected claim 52 under 35 U.S.C. §103(a) as being unpatentable over Perry in view of Mallet and further in view of U.S. Patent No. 6,366,289 issued to Johns ("Johns"). Claim 52 depends from claim 48, which is believed to be allowable over Perry and Mallet for reasons similar to those discussed above. The Applicants have briefly reviewed Johns and submit that the missing limitations are also not taught or suggested in Johns. Accordingly, claim 52 is believed to be allowable.

35 U.S.C. §103(a) Rejection – Perry in view of Mallet and Mori

The Examiner has rejected claims 53, 54, 56, 57 and 62 under 35 U.S.C. §103(a) as being unpatentable over Perry in view of Mallet and further in view of U.S. Patent No. 6,704,018 issued to Mori et al. ("Mori"). Claims 53, 54, 56, and 57 depend from claim 48, and claim 62 depends from claim 58, which independent claims are believed to be allowable over Perry and Mallet for reasons similar to those discussed above. The Applicants have briefly reviewed Mori and submit that the missing limitations are also not taught or suggested in Mori. Accordingly, claims 53, 54, 56, 57 and 62 are believed to be allowable.

Applicants also point out that they do not admit the appropriateness of combining any of these references together. Applicants reserve the right at a later time to argue that the combination is not appropriate.

Conclusion

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance. Applicants respectfully request that the rejections be withdrawn and the claims be allowed at the earliest possible date.

Request For Telephone Interview

The Examiner is invited to call Brent E. Vecchia at (303) 740-1980 if there remains any issue with allowance of the case.

Request For An Extension Of Time

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

Charge Our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 7-19-04

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